

A Nuisance Diatom Species: *Didymosphenia geminata* in Western Streams

Sarah Spaulding

Ecologist

United States Geological Survey/National Wetlands Research Center

(303) 312-6212

spaulding.sarah@epa.gov

Authors: Sarah A. Spaulding¹, Karl Hermann², Gene Steuven³, Jack W. Erickson⁴

¹United States Geological Survey, National Wetlands Research Center

²U.S. EPA Region 8

³South Dakota Dept. of Environment and Natural Resources

⁴South Dakota Dept. of Game, Fish and Parks

Keywords: diatoms, fisheries, nuisance and invasive species, stream condition, western streams

Historically, *Didymosphenia geminata* (Bacillariophyta) is native to northern-latitude lakes and streams. The diatom species was considered to be restricted to low-nutrient, low-temperature habitats with little anthropogenic impact. In recent years, its distribution has changed.

Didymosphenia geminata not only appears to be expanding its geographic range to lower latitudes and elevations, but it increasingly forms extensive masses covering stream benthos.

This species of diatom is unusual because it is a native species that has taken on the characteristics of an invasive species within its native range. The spread of *D. geminata* is of concern for stream ecosystems for several reasons: (1) The organism has a large spatial extent. Stalks formed by *D. geminata* may cover almost all available benthic substrates, forming dense mucilaginous mats up to several centimeters thick. This diatom may dominate over 200 km of river reach, as in Montana. (2) Other algal species are excluded from the stream habitat. The dense mats prevent the growth of other diatom species, which are an important source of food for aquatic invertebrates. (3) The diatom has implications for the aquatic food web. Large populations of *D. geminata* are correlated with a decrease in abundance of some aquatic invertebrate species and an increase in chironomids. (4) The impact to fisheries is unknown. State fisheries managers and anglers are concerned about the potential negative impact of *D. geminata* to fish populations. (5) The diatom has demonstrated an ability to cross watershed boundaries. In fact, it is an invasive species in New Zealand. In October 2004, *D. geminata* was found in excessive populations on the South Island, the first occurrence of *D. geminata* in the southern hemisphere. In this poster, we will present documentation of brown trout (*Salmo trutta*) and *D. geminata* populations in a 22-km reach of Rapid Creek below Pactola Reservoir, South Dakota, and examine the regional distribution and spread of this diatom in the western U.S.